AMSAT™

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DEADLINE for copy for next
NEWSLETTER is
1 August 1976

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COVER

A Bicentennial photo showing Susan, daughter of G3ZCZ/W3. Joe offers this photo as his excuse for any strange signals heard via the satellites. Photo credit W4ART.

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MICROPROCESSORS

A set of printed circuit cards for an 8080 based system will be available at cost (about $12.00 per card) to AMSAT members. These cards were developed for Navy-Marine Corps MARS Computer Automated Teletype Control. The first four cards comprising the processor card, a 4K RAM (2102 type) card, a 4K EROM (1702A Card) and a serial i/o-clock card will be available this fall.

The cards are double vector board size with two sets of 44 pin connectors for i/o and utilize a synchronous bus structure. Anyone interested in obtaining some cards please send a QSL card (listing quantities of cards of interest and indicating interest in any bulk purchase of Integrated Circuits) and an SASE to me at the Editorial address listed on Page 2.

A full set of follow on boards is planned and full details of the project will be mailed out in those SASE's in the fall.

Joe Kasser, G3ZCZ

THE SOUTHERN HEMISPHERE EFFECT

BY GRAHAM WISEMAN, VK5EU/VK5ZAD

In the way of introduction, I should mention that this effect has been noticed by every station of reasonable satellite capability, with whom it has been discussed.

I have observed the effect for more than 12 months from VK5, and for a period in excess of that from Long Island, New York, under the call of VK5ZAD/W2.

The two biggest differences I noticed on my return to VK, were the improved satellite sensitivity due to the lighter loading, and this Southern Hemisphere effect. The results of my tests to date are as follows: Let the reference value of 0 dB be the strongest telemetry strength point, then a typical pass gives the following results:

Satellite Position	Telemetry Strength	My Returned Signal
2400 miles S (Horizon)	-10 dBR	-15 dBR
2000 miles S	-2	- 2
1500 miles S	0	0
500 miles S	0	0
Overhead	-5	- 5
500 miles N	-10	- 7
1000 miles N	-15	-12
1500 miles N	-22	-20
2000 miles N	-27	-27
2400 Miles N (Horizon)	Unreadable	-45*

---

*This figure allows for 12 db antenna gain on 2 m.

(1) The effect appears to be evident only on the 10 m signal - The signal I get into the satellite appears to actually improve with respect to the telemetry when the satellite is in the North.

(2) A station south of me has difficulty copying the satellite 10 m signal when it goes North of him whereas his signal as received at my station still appears to be at least as strong until the satellite goes north of me.

(3) When the satellite goes North of Me it drops in strength to me but more northerly stations will still be copying me well.

(4) On evening passes an additional 3-5 dB of altenuation is evident when the AMSAT-OSCARS 6 & 7 satellites approach the Equatorial regions, possibly due to residual ionization effecting 10 m, however, this effect is not always in evidence.

(5) The depth of fade increases on both spacecraft when located to the North compared with to South, the severity being greater on OSCAR 7. (Probable due to (4) above).

(6) This effect although noticed in NY W2, was mirror in effect, however stations in S. America did complain of considerably greater difficulty being experienced in copying me via 7 than via 6.

(7) From what I understand of the OSCAR 7 Antenna configurations, the antenna polarizations as listed in the Newsletter and other places is incorrect. Northern Hemisphere should read North of users station, and Southern Hemisphere should read South of user station. The cause of the change in polarization direction I should think is the change in spacecraft antenna orientation with respect to the user ground station as the satellite goes overhead, not as regards to which hemisphere it is in.--eg. direction of circularity is opposite one side of a turnstile antenna to that on the other side.

Is my analysis correct or is there something, some factor, that I am not aware of?

(Any Comments -- Anyone -- Editor)

MINUTES OF BOARD OF DIRECTORS MEETING

1 FEBRUARY 1976

The meeting of the Radio Amateur Satellite Corporation (AMSAT) Board of Directors (BoD) was called to order at 1435 EST, 1 February 1976, at the Goddard Space Flight Center, by President Klein, K3JTE. BoD Members present were:

Thos. A. Clark, WA3LND	William Dunkerley, WA2INB (by phone)
Larry Kayser, VE3QB (by phone)	Jan King, W3GEY
Perry Klein, K3JTE	William Tynan, W3KMV
William Webster, WB2TNC (alternate)	

Others present:

Victor Clark, W4KFC, (VP ARRL)	R. J. Carpenter, W3OTC

The merits of the Amateur Satellite Service Council (ASSC), was discussed. With the activity of the ARRL Foundation in supporting satellite activities, some questioned the need for the ASSC. Vic Clark pointed out that ARRL has spent about $150,000 on satellite support, and it sees the ARRL Foundation as a solution to the satellite funding problem. He feels that ASSC does perform a useful function in giving weight to requests for satellite support. After further discussion, T. Clark moved that AMSAT continue its support of ASSC as outlined in its charter. Tynan seconded. Vote - 4 yes, 2 no, so the motion carried. After further discussion T. Clark moved that AMSAT BoD go on record as favoring a change in the ASSC charter to provide that the ASSC chair be rotated among the constituent organizations on a periodic basis. This was unanimously carried.

In view of the newly advanced possible launch dates for the Phase III spacecraft, AMSAT will have to spend a lot of money in a short time. W. Tynan and T. Clark strongly suggested that a formal recommendation for funding be sent from ASSC to the ARRL Foundation before its 28 February meeting.

There is a possibility that Jan King may be willing to work full-time on getting Phase III ready for launch, even at considerable personal sacrifice; this will demand substantial funding. There was further discussion of the possible source of this funding. In the past, employees of AMSAT have been paid exclusively by means of donations, mostly those of the ARRL, the ARRL Foundation, and IARU Region I. Membership dues and Life-member donations have been kept separate. There was a discussion on this separation. It was felt that the first duty of AMSAT to its members is to keep the present satellites operating and their replacements under development. There was a general concensus that a life-member reserve of $50 be held for each life member. T. Clark moved that the prohibition against using dues funds to pay salaries be removed. He also felt that present and potential employees should not vote on this matter. President Klein vacated the Chair and VP T. Clark conducted the following vote: 4; (Kayser, Dunkerley, Tynan, Clark). No, keep the prohibition: 2; (Klein, King). The motion to drop the prohibition passed. President Klein resumed the Chair.

Those present thanked V. Clark for his attendance as he left the meeting at 1620 hrs.

A proposed visit the AMSAT US and Canada by Martin Sweeting of the University of Surrey command station staff, was then discussed. W. Tynan moved that up to $300 be authorized to assist Mr. Sweeting in trip expenses. There were 6 yes votes, L. Kayser requested to be recorded as voting against this motion.

The meeting took a 10-minutes break starting at 1640 hrs.

L. Kayser and W. Webster left the meeting at this point.

On a motion by T. Clark and seconded by W. Tynan, funds were authorized for up to two persons to attend the ASSC and/or ARRL Foundation meetings in the near future, if required. This passed unanimously. W. Tynan moved, and T. Clark seconded, that AMSAT request an ASSC meeting to be held before the next ARRL Foundation meeting, the AMSAT appointee to be an official representative.

There was an extended discussion of the proposed 1976 Budget. Some very minor modifications were made.

It was the sense of the BoD that HR Magazine be encouraged to pursue the "Satellabe" under license or some other such arrangement.

(Continued on Page 6)

MINUTES OF BOARD OF DIRECTORS MEETING

18 APRIL 1976

The Radio Amateur Satellite Corporation (AMSAT) Board of Directors (BoD) meeting of 18 April 1976, at the Corporate offices, 700 7th Street, SW, Washington, D.C., was called to order at 1345 EST by President Klein. The following were present:

Perry I. Klein, K3JTE	Jan King, W3GEY
Thomas A. Clark, WA3LND	William A. Tynan, W3KMV

Others present:

Roy F. Stevens, G2BVN	Robert J. Carpenter, W3OTC
Richard Daniels, WA4DGU	

It was decided that the closing date for nominations for candidates to the BoD be held open until the mid-May Newsletter closing date. There was a discussion concerning the annual meeting. It was decided that it be planned for the weekend of Veterans Day, 23 October, at a Washington-area site. There will be an afternoon technical session preceeding the meeting.

T. Clark was authorized to make an advanced payment for the dinner expenses for the 1 May 1976 meeting.

A travel advance of approximately $150 was authorized for J. King to represent AMSAT at the Dayton Hamvention.

There was a detailed and extended discussion of the travel costs involved in the upcoming Experimenters and Operations meetings. The projected travel costs for the Experimenters meeting (1 May) are $2830, of which over half involves travel from VK. About $700 of the total will be covered by VE and VK AMSAT organizations in the form of meeting their local expenses which might otherwise be covered from AMSAT funds. The travel costs of the Operations meeting (8 May) will be around $400. These travel expenses were approved (that for G3YJO having been approved at the previous BoD meeting).

The first "Echo 70" 70 cm SSB transceiver for use in the portable satellite terminal was on display. There was a discussion of the merits of purchasing the third "Echo 70" transceiver at this time. This purchase was authorized without objection.

There was a discussion of the establishment of an AMSAT Investment Advisory Committee, with primary duties the choice of placements for the Life Member Reserves. It was voted that the Committee consist of approximately five members, the President and Treasurer of AMSAT to be among them. Others suggested for the Committee were R. Soifer, K2QBW, as Chairman, Larry Shima, W0PAN, and Pete Hoover, W6APW. Final appointments will be made at a later date.

There was considerable discussion, led by J. King, of the necessity of planning operational details for the Phase III spacecraft. There must be consideration of band-plans, priority of users, and a host of other things. VP Ops K1HTV will be asked to coordinate an international effort.

There was some discussion about the Newsletter. A motion to commend its Editor, G3ZCZ/W3 for his excellent work was unanimously approved. Upon further discussion it became clear that AMSAT has no policy for the review of news releases, publicity, or anything else published in its name, even the Newsletter. It was unanimously approved that henceforth all AMSAT publications shall be reviewed by a member of the BoD prior to release.

D. Daniels arrived at 1630 and presented a review of the progress of the launch request to NASA for Phase III.

After some discussion, P. Klein was directed to coordinate the Satellabe orbit calculator project with interested parties such as K2ZRO, Ham Radio, WB2ZOW, and K6KSY with a view to an early resolution of the question of production of such a calculator.

It was unanimously resolved that the acronym AMSAT shall be spelled entirely with capital letters, as covered by our Trademark. The Secretary was directed to notify the Managing Editor of QST of this action.

(Continued on Page 6)

1 FEB. 1976
MINUTES OF BoD MEETING (CONTINUED)

T. Clark moved that AMSAT be ready to conduct a fund-raising campaign of its own if the various requests for funds do not prove sufficient. This was approved by all present.

On motion of T. Clark, the proposed 1976 Budget was approved for submission to ASSC and the ARRL Foundation. A final Budget will be adopted after the 28 February meeting of the ARRL Foundation. The vote was as follows:

Yes: 4; Clark, Dunkerley, Kayser (proxy), Tynan
No: 1; Dorian (Proxy)
Abstained: 2; King, Klein

There was a discussion of a proposed Bicentennial President to Governors message which QCWA has suggested that AMSAT handle. W. Tynan and Chuck Towns will look into this matter.

The OSCAR Sexagesimal Club (OSC) award was authorized.

The BoD voted to request a six-month extension of the ASCII special temporary authorization from FCC.

It was voted to make an official request to NASA for launch of the Phase III spacecraft; few specifics will be required at this time.

A delegate (W3OTC) and alternate (W3KMV) were appointed to The Middle Atlantic FM and Repeater Council (TMARC).

After a short discussion of miscellaneous matters, the meeting adjourned at 1920 hours.

Respectfully submitted,

Robert J. Carpenter, Secretary

18 APRIL 1976
MINUTES OF BoD MEETING (CONTINUED)

A confusion in the appointment of Area Coordinators was pointed out by B. Tynan. The following policy was adopted: Appointment of Area Coordinators is a function of the Operations, and Operations and the Office of Information should jointly establish criteria for their appointment. In the case of non-US areas, local AMSAT, IARU society, or other assistance shall be sought in the selection of Area Coordinators.

Roy Stevens (member of the RSGB Telecoms Liason office and Secretary of IARU Region I) presented his observations on the prospects for future amateur radio frequency allocations as they affect AMSAT. He had just attended the IARU WARC preparatory meeting in Miami. He further described amateur radio in IARU Region I. The BoD thanked him for sharing his insight and for spending a major portion of his first visit to Washington attending its meeting.

The meeting adjourned at 1800 EST.

Respectfully submitted,

Robert J. Carpenter

W6PAJ ORBIT BOOKS -- AMSAT OSCAR 6 SCHEDULE

NOTE: The schedule for AMSAT-OSCAR 6 is not correct as published.

The correct schedule is as follows: USE only on ASCENDING NODE

passes on MONDAY, THURSDAY and SATURDAY.

AMSAT-OSCAR-6 TRANSPONDER OFF FOR A WEEK

BY RICHARD ZWIRKO, K1HTV
(V.P. OPERATIONS)

The AMSAT-OSCAR-6 Transponder had to be kept OFF for a week from May 9th to the 16th, because the battery voltage dropped to a dangerously low level. This condition was the result of a number of things. First, the position of the solar cell arrays in relation to the sun is such that less charging current is available during the months of May, June and July reaching a minimum in mid June. The low battery voltage problem came quicker than expected, probably because the primary command stations' operators were in Washington during the second weekend of May attending the AMSAT Operations meetings. Although backup command stations covered as best they could, they could not duplicate the automated command stations which were temporarily off the air, and the AMSAT-OSCAR-6 spacecraft continued to false itself 'ON' too many times. Many users took advantage of this "BONUS" satellite time and unfortunately, the selfishness of these users, especially the high power stations caused the battery voltage to drop to the dangerously low level.

For those not familiar with the Morse Code Telemetry on AMSAT-OSCAR 6, channel 3A normally reads between 60 and 65. Command stations have been instructed to turn OFF the transponder before it leaves their commanding range if channel 3A reads a value of the order of 53 to 55 and to turn it off immediately if they hear a count of 52 or less. During the reference orbit of Sunday, May 9th, (Saturday evening Washington time) telemetry copied indicated something drastically wrong with AMSAT-OSCAR-6. Channel 3A was reading a count of 03 and abnormal readings were also noted on the other channels.

Word of the serious battery problem reached the command station operators G3YJO, VE3SAT and VK3ZDH (and K1HTV) via the 25/85 AMSAT repeater. When the message was delivered, it looked like we had a dying satellite. The next few hours were spent formulating and activating an operations plan to save AO-6. It was vital that the transponder be kept off to prevent possible damage to the satellite so phone calls were made to the backup command stations VK6HK in Perth, Australia, W6ELT and W6CG in California. The University of Surrey, location of the British command station was called at about 4 AM their time. W3LPL was a great help in getting the urgent message to the Hungarian command station at Budapest.

All command stations were instructed to keep AO-6 off until further notice. Two days later the battery was still not up to a level where the transponder could be kept on for a pass, so the decision was made to keep it OFF for the entire second week of May, hoping that the battery would be sufficiently charged for the Saturday morning of May 15 when Governor Jim Edwards of the state of South Carolina was scheduled to use the AO-6 satellite via Amateur Radio station AA4SC which was to be especially set up at the Governor's mansion for Bicentennial week in South Carolina.

Fortunately the week of recharging did some good and the demonstration went as scheduled with dignataries and news media present at the Governor's QTH to hear AMSAT-OSCAR 6 in action. Contacts were made by AA4SC with AMSAT Bulletin station manager W1NU and Bulletin Station K2OVS who gave greetings to the Governor from AMSAT. Our primary North American Telecommand station, VE3SAT passed along greetings from Canada while YV5ZZ in Caracas did likewise for Venezuela. Upon completion of this orbit, with the Telemetry indicating a recharged battery, the decision was made to return AO-6 to regular service as of the reference orbit of Monday, May 17.

During the Amsat operations meeting less than 12 hours before the battery problem was discovered, it was decided that it would no longer be advisable to keep the descenting node Sunday passes ON because of the extra demand on the battery. So, effective immediately, the AMSAT-OSCAR 6 spacecraft will be available for use during ascending node passes only on MOndays, Thursdays and Saturdays GMT. Hopefully this reduced schedule will allow the satellite to survive the critical month of June in which the solar cells are producing the least amount of charging current for the battery. If the battery voltage cannot be maintained at a safe level it will become necessary to further reduce the operating schedule to keep AMSAT-OSCAR-6 alive and well.

ARRL FIELD DAY

Extra Field Day points can be gained by making contacts via the OSCAR satellites. It has thus been decided to change the operating schedule of OSCAR-6 for FD weekend. In order to keep the satellite's battery more fully charged the Ascending Node orbits of Thursday 24th Of June and Saturday 26th of June which would normally by on will be kept off. The following AMSAT-OSCAR 6 orbits will be turned on for FD QSOs (as long as the battery allows).

Starting Saturday 26 June, 1976:

Orbit #	Equatorial Crossing Time - GMT	Longitude	Call Areas in Range
16906	18:07	327.6 W	Northern W1,2,3,8,9,0,7 states and VE, KL7, KH
16907	20:02	356.4 W	Same as previous orbit
16908	21:57	25.1 W	W1,2,3,8,9,0, VE,KL7, northern W4 and W7
16909	23:52	53.9 W	All states except KH6; All VE
16910	01:47 (27 Jun)	82.6 W	Same as previous orbit
16911	03:42	111.4 W	W5,6,7,8,9,0, VE3-8, KL7
16915	11:22	226.4 W	W1,2,3,4,8,9, VE1-4.
16916	13:17	255.1 W	All states except W6 & KH. VE1-6 and east VE7.
16917	15:12	283.9 W	All states except KH6
16918	17:07	312.6 W	All states except southern W4
16919	19:02	341.4 W	Northern W1,2,3,8,9,0,7, & VE,KL7,KH6
16920	20:57	10.1 W	W1,2,3,8,KL7,VE & Northern W9,0,7

AMSAT-OSCAR 7 will be in Mode-B (70 cm/2 M) on GMT Saturday, June 26, and will switch to Mode-A (2 M/10 M) at 00:00 GMT on Sunday, June 27, 1976. AMSAT-OSCAR 7 will be about 27 minutes behind its older brother OSCAR-6 during the Field Day weekend. The MAXIMUM effective radiated power for either satellite is 100 watts.[e.r.p. equals the antenna gain times the power delivered to the antenna.]

If you use a special call for Field Day, don't forget to notify WA1EHX (Bureau) how to route the incoming cards for your special call.

SPECIAL LOW POWER (QRP) TEST

All users of the 70 cm to 2M Mode-B transponder of the AMSAT-OSCAR 7 satellite are invited to participate in a special three day low power (QRP) test which will occur on June 16, 17, & 18, 1976. The test will begin at 0000Z, 16 June, when the satellite switches from Mode-A to Mode-B on orbit #7245. It will be kept in this mode by AMSAT Telecommand stations located in Canada and Australia. The final orbit of this three day test will be #7282 on Friday June. 18.

All stations using the transponder are urged to run 10 WATTS effective radiated power or lower, and those who cannot reduce power to this level are asked not to transmit in the 432 MHz uplink passband, since their presence will reduce the effectiveness of the many low power users who will participate in the QRP test. Signal reports sent should include the e.r.p. being used, (i.e. RET 569 erp 5W) so that those listening can get an idea of how effective low power can be via AMSAT-OSCAR 7 when the high power stations aren't hogging most of the available power.

Remember that one watt into a 10 db gain antenna system will produce the maximum recommended 10 watts effective radiated power. If an exciter runs 10 watts or more output, a half wave dipole will be a big enough antenna to use, and if more attenuation is needed to reduce the e.r.p. an old piece of lossy coaxial cable can be added to the existing transmission line. It doesn't really matter how the 10 watts e.r.p. is achieved. The important thing is to run QRP for the three day test and send the results along with a station description to AMSAT, P.O. Box 27, Washington, D.C.

AMSAT "OSCAR" AWARD STATUS UPDATE

Recipient

7. W5SLL/0 *
56. W2EUO
57. VE3TP
58. YV5ZZ
59. W7JDZ
60. W7VEW
61. WA1POJ
62. DU6EG
63. SP2DX
64. WA4DDH
65. OK3CDI
66. WA6UAP
67. VE3EYR
68. K9EIV
69. W9HVP
70. WA1SQB
71. W1JAA
72. K3RXK
73. W3LB
74. W1CRL
75. K4CAW
76. TU2EF
77. W7CTX
78. K2OVS
79. K2AXQ
80. WA3NSR
81. WB4YFC
82. W6HEW
83. WA4NKN

*Call incorrectly listed in March Newsletter.

AMSAT-OSCAR QSL BUREAU USER LISTING UPDATE (11 MAY 1976)

Add the following calls to the previous listing;

WA1EHF
W1EUJ
K1FJM
W1MX
WA1NBM
WA1WVK
W1ZW

K2AXQ
K2BF
W2CVW
WB2ISX
W2OMS
WA2VPP
WB2ZTV

W3BRG
W3CBU
K3JPT
WA3NSW
K3WHC
W3ZM

K4AC
WB4CHZ
W4EAT
W4GCB
W4GGU
WB4GID
K4GTQ
WB4HQE
W4JK
WB4KPQ
W4PIV
WA4SUH
W4ZCB

W5AJG
K5AQH
WB5CBC
W5CTL
WA5DDJ
WA5DYH
K5DZF
WB5KIA
WB5MSU
WB5ORL
WB5QPG

WB6BZW
W6DWJ
W6HEW
W6KMW
WB6RTK
WA6UAP
WB6UZX
W6YKS
WB6ZEP
WA7BRL
K7CC
W7FF
W7FOF
W7MCU
W7NFC
WA7VDY

WA8GGN
WB8JHT
WN8TVD

W9DOR
K9GSC
K9OSK
K9PKQ
WB9RJQ

WA0DXZ
W0HPN
W0KYB
WB0OTA
K0OVV
WA0OZP
WB0PNG
W0TNI
WA0YED

VE3DTY
VE6YZ
VE7AHG

--DX--
CT2BS
DA1EZ
DJ6RD
G3ZCZ
G5BJS
G8NF
KH6FMT
KH6HEI
KL7JDO
KL7MF
TI2NA
VK3ZAI
VK5ZAD
WA7SIN/8R1
YV5ZZ

CLASSIFIED

These messages are published as a service to members at no cost on a space available basis. Deadline for next issue is 1 August 1976.

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Italian STE Receiver, (modifications described in the March issue of the Newsletter). Factory sealed carton $223.46. Joseph Reyman, W6PAJ, 953 Avenida Ladera, San Dimas, CA, 91773.

FOR SALE: Heathkit SB-500 2 meter transverter with 10 meter I.F. Recently overhauled and aligned at factory. Boxed in factory carton, ready for shipping. $150.00 firm. Contact Bayard Coolidge, WA1RQT/1, Carter Road, Merrimack, N.H. 03054. Phone evenings (603) 424-6368.

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WANTED: 2 m CW SSB transmitter in good condx for purchase or will trade good SB-500. WA5YWT, 3805 Erbbe NE, Albuquerque, NM 87111.

DAVCO DR-30 Receiver (fitted with 5.9-6.4 MHz and 11.5 to 12 MHz) and DR-30S Power Supply $240.00. DJ6ZZ, 432 MHz transmitting Converter, in box, needs tune up. $40.00 G3ZCZ (301) 622-2194.

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ADVANCES IN SPACE SCIENCE Vol. I, II, and III; and SPACE HANDBOOK: ASTRONAUTICS AND APPLICATIONS. Each contain much information on tracking, communication. Will trade for AMSAT Newsletter Vol. I-VII. Marc D. Miller, 785 5 Blvd. East, Apt. 4E, North Bergen, NJ 07047 (201)861-8344.

1976 Board of Directors Election

The Election to fill three expiring seats on the AMSAT Board of Directors will be held at the Annual Meeting, to be held at the Goddard Employees Recreation Center, Greenbelt, Maryland, 23 October, 1976, at 8:00 pm. Members of AMSAT may either vote at the meeting or transmit the following ballot to reach AMSAT Headquarters before the meeting. If you vote by mail, you may recover your ballot at the meeting, should you desire to change it. Seal your ballot in a blank envelope and enclose this in an outer envelope on which you MUST write your name, MEMBER NUMBER and Zip Code (Non US members write country instead). (See any Newsletter mailing label to find your number). Mail to:

Election, AMSAT, Post Office Box 27, Washington, D.C. 20044

Be sure to vote for no more than THREE candidates.

Robert J. Carpenter, W3OTC
Secretary

BALLOT
1976 AMSAT BOARD OF DIRECTORS ELECTION

Vote for only THREE (3)

Thomas A. Clark, WA3LND ( )

William I. Dunkerley, WA2INB ( )

John C. Fox, W0LER ( )

Patrick J. A. Gowen, G3IOR ( )

Joe Kasser, G3ZCZ/W3 ( )

Larry S. Kayser, VE3QB ( )

William J. Webster, Jr., WB2TNC/3 ( )

Richard Zwirko, K1HTV ( )

OSCAR ACTIVITY

News of Special Interest to Satellite Communicators

N5ALG	New Orleans La, Aug 11-15, 1976. (Including BX day) Special station at American Lutheran Church super youth rally. Mode A and B stations are being donated by KLM Electronics. For more details or QSL's contact WB0NST.
WA7SIN/8R1	is active on Oscar 6 using Eico Rig.
EA8JJ	expects to be back on OSCAR in November and December.
XE1TU	reports that a number of Mexican AMSAT members are getting on Mode B with qrp.
KC4AAC	uses a TX62, worked LU7DXC, LU7DJZ, LU4DYH, LU2FAL, heard PY8AHC and some ZL's.
GD3IOR	will be active using Modes A and B during June 14-19th Mode B will be using QRPP.
8P6DR	QSL's for contacts made during the period of 23 Mar. to 13 Aug. 1973 should be claimed now as a new supply will not be reprinted. QSL via Richard Limebear, G3RWL direct or via the RSGB.
W1EUJ/VO2	Labrador will be active via AMSAT-OSCARS 6 and 7A for two weeks starting June 26th.
TU2EF	is active on Mode B, downlink at 145.970 MHz

CANDIDATES TO BOARD OF DIRECTORS

Thomas A. Clark, WA3LND/W0IUF
Laurel, Maryland

Nominated by Lockheed ERC ARC and AMSAT-Mexico, AMSAT LM-84, first licensed 1952. An experimenter, active in VHF/UHF from Colorado in 1959. Was President of U. of Colo. ARC and Boulder ARC; holds BPL, WAS, WAC. Was Colorado PAM and Asst. Sec. in late 50's. Currently main activities relate to AMSAT and WARC.

Presently Director and Executive VP of AMSAT. Prepared AMSAT filing on FCC Docket 20282 (with K2QBW). Served as alternate AMSAT rep to ASSC. Coordinating AMSAT portable satellite terminal project. With W3HCF did all calculations for W6PAJ Orbit CAlendar. Serves as an AMSAT rep on WARC Amateur Service preparatory group.

Employed by NASA/Goddard as head of effort in Very Long Baseline Interferometry to study Quasars to make ultra-precise geophysical measurements. Serves on numerous professional committees in astronomy and radio astronomy. Also Associate Professor of Astronomy at University of Maryland.

William I. Dunkerley, WA2INB/KL7ELA
New Britain, Connecticut

Nominated by NIH Radio Club, AMSAT-Mexico, and Connecticut Wireless Assn., first licensed in 1956, AMSAT member LM-62. Founded high school radio club, past VP East Coast VHF Society, past Asst. Dir., ARRL Hudson Division.

Member AMSAT Board of Directors, US CCIR (radio technical advisory committee for ITU). Member Scientific Advisory Council of Talcott Mountain Science Center.

Managing Editor of QST magazine, also in charge of ARRL OSCAR Educational Program.

John C. Fox, W0LER
Minneapolis,Minnesota

Nominated by Central States VHF Society, AMSAT member 1075, licensed since 1950. Active on 144 and 432 MHz, DX, meteor scatter, aurora, EME, propagation studies. All homebrew equipment including antenna. Twice President of Central States VHF Society, current President Anoka County ARC.

Has been active in propagation studies for all OSCARs since OSCAR 1. Has several technical papers on propagation using OSCAR 2 through 7 signals. Currently active in telemetry recovery from OSCAR 7.

Employed as Technical Specialist on large-scale computers for Control Data Corp., Advance Design Lab.

Patrick J. A. Gowen, G3IOR
Norwich, Norfolk, England

Nominated by Radio Society of Great Britain, AMSAT member LM-225, licenced since 1952. Chairman U. of East Anglia Radio Club, Founder member East Anglian DX Contest Club (G4ANT). Active in Field Day and Raynet (emergency comm.), WAZ, DXCC 330 conf., interested in chasing DX on difficult frequencies, propagation, aerial development, and above all satellite communications techniques.

Founder and Chairman of AMSAT-UK. Active on both AO-6 and AO-7, using flea-power on 7B. Editor of UK "OSCAR NEWS", avid lecturer on OSCAR and AMSAT (40 in the past two years).

Employed as Chief Technician at U. of East Anglia in biophysical research and teaching. Electrophysiological investigation of plants and animals systems.

Ambition to spread international interest of amateurs in AMSAT, and to spread interests of AMSAT internationally.

Joe Kasser, G3ZCZ/W3
Silver Spring, Maryland

Nominated by NIH RC, AMSAT life member LM-105, licensed since 1968. Interested in VHF, DX and Contests. Has written numerous articles for amateur radio press in UK and USA. Likes homebrewing and QRP for both regular and satellite QSO's. Works OSCAR from apartment with antenna on balcony. Once wrote column for 73 Magazine.

Editor of AMSAT "Newsletter", head of AMSAT Publicity and Information Department. Participates in many AMSAT Hamfest displays. Made suggestion for formation of AMSAT QSL Bureau.

Would like to see AMSAT expand overseas as well as in USA, and to increase overseas participation in AMSAT operations, membership, and providing hardware for future spacecraft. Wants AMSAT to successfully make transition from small USA organization to large worldwide one.

Employed by COMSAT. Member of IERE. Came to USA just over 6 years ago.

Larry S. Kayser, VE3QB/WA3ZIA
Ottawa, Ontario

Nominated by Lockheed ERC ARC and Montreal ARC, AMSAT member LM-3, licensed in Canada since 1955. An experimenter and builder. Asst. Director Canadian Radio Relay League (formerly Canadian Div. ARRL).

Member, AMSAT board of Directors. First automated command station for OSCAR 6 and 7. Responsibility for microcomputer command of OSCAR 6 and 7. Worker in Phase III program.

Employed by Government of Canada, Department of Supply and Services, Engineering Procurement Officer for electronic data processing goods and services. Formerly Senior Engineering Associate, Bell Canada.

William J. Webster, Jr., WB2TNC/3
Seabrook, Maryland

Nominated by Goddard ARC, AMSAT member LM-89, licensed since 1965. VP Goddard ARC, principal instructor GARC training program. Restricted antenna OSCAR user.

Alternate member AMSAT Board of Directors. Net control operator for AMSAT 75m net from WA3NAN. Orbital prediction source for North American command stations. Maintains OSCAR 7 orbital elements based on amateur measured Doppler curves.

Member of scientific staff of the Geophysical Branch, NASA Goddard. PhD in radio astronomy, working on low power ground station for data relay satellites.

Richard Zwirko, K1HTV
Meriden, Connecticut

Nominated by Connecticut Wireless Assn., AMSAT member LM-160, licensed since 1958. Extra Class. Past Pres. Northeast VHF Assn. and Conn. Wireless Assn.

AMSAT VP for Operations and alternate member of Board of Directors. Served as telecommand station operator at TAlcott Mountain UHF Society during first year of OSCAR 6. Has been AMSAT Bulletin station.

Employed as broadcast technician at WTIC AM/FM, Hartford, Connecticut.

THE SMALL TERMINAL, LOW POWER, SATELLITE OPERATOR

BEGINNERS SERIES

BY DAVE CLINGERMAN-W6OAL/KH6HQX

In the past, much has been said and written about how and what to use for successful satellite operation. The questions and arguments as to equipment are always present and in most cases bewildering to the neophyte satellite operator. Certainly we have a miriad of equipment types to draw from. But, not to sacrifice quality for quantity and in the long run wind up with redundancy.

First off, we need a good stable driver and adequate ten meter receiver. Any ordinary HF transceiver fills this bill. I have used from the most expensive Collins equipment to the least expensive Heathkit and at present am using an FT101EE Yaesu and find it just as adequate as the others. If the sensitivity falls off at the high end of ten meters, stick a preamp on it. It'll work fine. A low level RF take off is needed to drive transverters so bring one off your driver and out a connector on the rear panel of your transceiver. By the way most of the Yaesu transceivers are so equipped. We now have two problems solved. We have a good ten meter SSB/CW driver and an adequate ten meter receiver.

Let us consider the fact that you are a band changing operator that wants to work both satellite modes A & B. Here we must stop and think about what other band we must transceive on and not become redundant in our gear accumulation. Two meters is the uplink on Mode A and the downlink of Mode B. Well, if we used a 2 M transverter in conjunction with our HF transceiver we could uplink on two meters alright and hear the down link on ten meters,if we could switch back and forth on the transceiver fast enough, but that's out of the question.

How about an extra ten meter receiver? Well, fine but now you have an extra receiver plus a two meter receive converter that isn't being used. The receiver won't be used on Mode B, unless with the converter that you aren't at this time using on Mode A, (*Editorial Note: Some licensing authorities require that a receiver be available for each transmitter) also the dollar signs are starting to get heavy at this point. Since in operating modes A & B we must transmit and receive on two meters, why not let the second piece of equipment for your venture be a two meter transceiver. Now you can uplink on two, down link on ten and also hear the downlink of Mode B on your two meter transceiver. Two pieces of equipment and you almost have the problem shipped. As for what type of two meter transceiver, Gonset Sidewinders are still around, the Ultimate 2000's and 5000's aren't out of reach, the TS700's are available. Myself I prefer the KLM Echo II.

Now all that is left is to put some RF out on 70 cm. Just one more piece of equipment and at this point finances are pretty well withered and possibly marital relations a bit strained. Rather than another transceiver, though they are available, why not a transverter. For example, QM 70 Products of Worchester, England, puts out a dandy little rig for about $150.00 and provides 10 watts pep output for one watt of 28 MHz drive. This is about the only 28/432 transverter left on the market because of the economy crunch. (Editorial Note: Others are becoming available, viz Microwave Modules from England who also make a neat little varactor tripler -- 144-432 MHz. --Joe) Now we can operate both modes A & B with three pieces of equipment. Let's take a look at my station. On Mode A, I uplink on two meters using the Echo II and receive the downlink on the Yaesu FT101EE ten meter band. On Mode B, I drive the QM 70 transverter with the Yaesu FT101EE giving me ten watts pep on 432 MHz and I receive the downlink on the Echo II. Simple, efficient operation.

The Echo II puts out atleast ten watts pep on two meters and a ten element yagi given me the 100 watts erp that AMSAT has requested we use. The same goes for Mode B. Ten watts from the QM 70 to a ten element yagi or six turn helix amounts to 100 watts erp.

I have enjoyed thousands of QSO's via OSCAR 6 and 7 from my home QTH in Oak View, Calif. and now cramped for space, living on the second floor of a three story Bachelor Enlisted Quarters, I am still able to enjoy the fascination of space communications. Try it, you'll love it.

"LETTERS AND COMMENTS"

Dear Joe,

By checking up my computer print-out of OSCAR 6 and of orbits for my location and comparing it with the list on pp. 36-38 of latest AMSAT Newsletter, I found out that Dec. 31, 1976 is missing on the print-out on p. 38!

73,

Harry, PA0LQ

Dear Joe,

In the March 76 issue of the Newsletter, we noted in the reference orbits, page 37 that the date of December 31, 76 is forgotten. Consequently the orbits of January '77 are faulty.

Please confirm if we are correct or not.

Thank you very much for your very interesting OSCAR experiments and the Newletter you publish.

Best 73's,

C. de Marnix, ON5MX

(COMMENT -- You are both correct---The stupid microprocessor forgot that a leap year contains 366 days and reset the date, one day early---Joe).

Dear Joe,

Enclosed you'll find my survey and here is my opinion of your editorial... GRRRRREAT...as Tony the tiger would say. It is about time we (collectively) got off our duffs and contributed something to our NEWSLETTER. It's the least we can do. A 13¢ stamp and paper and envelope are within everyone's finances.

My activities since last June took a break until February of this year. I made 9 contacts last June and we made our one CW contact for Field Day last year. After some more important things happened I finally got back on in February and have a total of over 50 contacts with over 40 different stations. All have been on OSCAR 6 and 7 Mode A as I do not have Mode B capability at the present time. We will be moving to N.C. this summer and then I hope to get on Mode B in the fall. I have listened to Mode B downlink with the 2 meter AM transceiver I use for uplink but as it has no BFO (I use the spot switch) I can't do much tuning in of stations. Plus the sensitivity leaves much to be desired.

73,
Carl E. Starnes,
W4EAT

Dear Joe,

I have been meaning to write about this for some time but have delayed until the current newsletter when my fears were confirmed. All OSCAR operators in Southern Africa are perturbed by the fact that OSCAR 8 will have a 101 degree inclination with the apogee thus virtually stationary over the northern hemisphere. All in all our scope for DX will not be extended much more than we currently get on Oscar 6/7. A brief passage in the UK AMSAT Newsletter said that the inclination would be about 50 to 60 degrees - this was more favourable for us, even though we would then be working the satellite for most of the time on our northern horizon at extreme ranges. What we would like to see, and I think will be fair to all concerned, would be a satellite in an orbit of about 30 to 35 degrees inclination, not because my latitude is 35 degrees, but because then the perigee will process rapidly and everyone will have a chance to work the satellite at all heights and hence DX coverages. This will also give more extended coverage at any one time for a particular station because, provided the satellite is above his horizon, he can work the satellite no matter what his latitude. I am sure the Australian and New Zealand amateurs, as well as South American, would like to see this kind of orbit. How about a piggy back aboard an INTELSAT launch?

I haven't run the 101 degree OSCAR 8 orbit on our computer to check visibility, although I've done the 50 degree and 60 degree type, but going from experience on US scientific satellites in similar type orbits to 101 degree at about 2 to 3 revs per day, we will have limited access. INTELSAT 66-96A on the other hand gives us signals for at least half the day, even when at its northern apex of about 18 degrees. To sum it all a 101 degree inclination orbit would be fine if the perigee will rotate rapidly, which it does not do for this inclination. Here at the southern tip of Africa I have no incentive to work for the various OSCAR certificates offered for the simple reason that there is no real DX. I can work the whole of Africa, part of South America (never ever heard any), and India and Australia are out of reach. Anyway that's enough of a moan, but if its not too late I would earnestly request that AMSAT consider a more favourable orbit for the Southern Hemisphere, despite the fact that we have a smaller user population.

I will be participating in the June QRP tests on OSCAR 7 Mode B. Have already tried the satellite at low power levels and am satisfied with the signal. Have had good results from 5 watts ERP. Quite a contrast to what was originally specified as for working Mode B - I think it was 400 watts ERP. We seldom use OSCAR 6 in this part of the world because it seems to be on so seldom, even on scheduled days. It's a pity because it's superior to OSCAR 7 A by a long way.

On page 5 of the March newsletter you ask for comments on OSCAR 8 passband. I can only report what goes on here in Southern Africa. All stations work CW, with a few on SSB. I can work RTTY but no one else can. SSTV has not yet made an appearance, and no educational or emergency use of OSCAR has been made or tried. At present we do not use a bandplan for OSCAR 6 and 7 in this part of the world because most times the satellite is empty and most activity takes place around 29.480 which has become the "national calling frequency". Mode B we call anywhere in the passband as we all have VFO capability, so I cannot really comment on a suitable bandplan as we do not have the problem northern hemisphere stations have.

Regards to all at AMSAT,
Yours sincerely,

Gregory Roberts,
ZS1BI

Dear Joe,

Thank you for the information on the AMSAT-OSCAR satellites. At the KNOX science fair, my exhibit received a first place. Then I went on to the Valporaiso Regional Science Fair and made a First Place there, also. In my display I had a diagram of OSCAR 6-7, a slide viewer with slides of the satellites, poster boards, an experiment with inertia, and a recording of QSO's made through the satellites by DJ6RD/w9.

Thanks and 73,

Dave Vitkus,
WN9RXV

Dear AMSAT:

Just a note from this station, CT2BS, to remind AO and AO users that in the past years, two meter signals from the U.S. and U.K. have been heard here in the Azores (during the summer months). So it may be worth while to listen occasionally on the 145 mHz uplink freqs. One might find some unusual DX just "waiting for the pickins." Also, VHF enthusiast may listen for my 2 meter beacon on 144.805. I'm using a new approach in my digital I.D. and control unit and have had excellent results since first applying power. Anyone interested in a similar project can drop me a note for full details and schematics.

Dave Jarrell, CT2BS
PSC Box 1008
APO New York 09406

P. S.
Am also open for experiments on this end.

Dear Joe,

May I offer some comments in regard to the proposed band space allocation for the new satellite.

One most lacking, and distressing thing is that the amateur radio bands do not really have distress or emergency calling frequencies.

Its a matter of time before our micro computer receivers go a-scanning every 5 kHz looking for an indicated call, so why not have 3 or 4 absolutely inviolate freqs carrying emergency traffic requests, easily recognized, and then followed by a QSY (or logic equiv!)?

Rx's on conventional receive mode could listen on these freqs. and follow a freq. shift request, also.

This is a chance for amateur radio to step forward in the field of emergency and life threatening communication.

Could it be simpler?

John Anthony
G3NDY/W3

AMSAT AREA COORDINATORS

The following new Area Coordinators are available for local help and information. This listing is in addition to the previously published one.

(USA)	
Minnesota	Ben J. Layton, W0UTT, Route 2, Box 8C, Glyndon, MN 56547 (218) 498-2249
Tennessee	Roy O. Hill, W4PID, 4051 Skyland Drive, Kingsport, TN 37664
Alabama	Robert H. Killian, K4GTQ, 316 Nevada Street, Birmingham, Alabama 35224
Louisianna	Steve Gradijan, WB5KIA, 616 Oakwood Drive, Gretna, LA, 70053
Kentucky	F. C. (Bo) Lowrey, WB4GZK, 3805 Hillcreek Road, Louisville, KY 40220
New Mexico	Bob J. Meilke, WB5QPG, 6801 Leander Ave., N.E., Albuquerque, NM 87109 (505) 821-2926
Massachusetts	W1CRL was erroneously listed last time as being in Maine.
Alaska	William R. Balzarini, K7MWC/KL7, Box 4-2544, Anchorage, Alaska 99509 (907)344-5619
(DX)	
Israel	Dr. Alex Vilensky, 4X4MH, POB 6342, Haifa, Israel
Chile	Ralf Hucke, CE6EZ, Box 145, Temuco, Chile
Iceland	Kristjan Benediktsson, TF3KB, Barmahlid 55, Reykjavik, Iceland
Cyprus	Charles Pandehis, 5B4KP, P.O.Box 1152, Nicosia, Cyprus
Brazil	ERROR: The wrong "Caixa Postal" number was listed last time, it should have read "Caixa Postal 427".
Canada	Area Coordinators Serge Szpilfogel, VE1KG, P.O.Box 25, Armdale, Halifax, N.S. Gordon Wightman, VE5XU, 3637 Victoria Avenue, Regina, SK, S4T 1M4 Tony Craig, VE7XQ, 20691 45A Avenue, Langley, BC. V3A 3G3, (604) 534-1296.

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